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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/661,226	09/13/2000	Bruce A. Fairman	50N3529.01/1433	7779

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EXAMINER

PHAN, TAM T

ART UNIT	PAPER NUMBER
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2144

DATE MAILED: 12/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/661,226

Applicant(s)

FAIRMAN ET AL.

Examiner

Tam (Jenny) Phan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2002.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-44 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 13 September 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2,3,4.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

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DETAILED ACTION

1. This application has been examined. Claims 1-44 are presented for examination.

Priority

2. This application claims benefit of the provisional application 60/160,640 (10/20/1999).
3. The effective filing date for the subject matter defined in the pending claims which has support in provisional application 60/160,640 in this application is 10/20/1999. Any new subject matter defined in the claims not previously disclosed in provisional application 60/160,640, is entitled to the effective filing date of 09/13/2000.

Information Disclosure Statement

4. An initialed and dated copy of Applicant's IDS form 1449, Paper No. 2-4, is attached to the instant Office action.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 21, 43, 44 are rejected under 35 U.S.C. 102(b) as being anticipated by Ehlig et al. (U.S. Patent Number 5,349,687), hereinafter referred to as Ehlig.
7. Regarding claim 1, Ehlig disclosed a system for performing a concurrent context switching procedure, comprising: a main context that is configured to support system execution tasks; a first concurrent context that supports first concurrent procedures; a

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second concurrent context that supports second concurrent procedures; and a context control module that controls switching procedures between said main context, said first concurrent context, and said second concurrent context (Abstract, Figures 22-24, column 33 lines 30-41, column 40 lines 3-16, lines 41-51, column 67 lines 49-64).

8. Regarding claim 21, the method for performing a concurrent context switching procedure corresponds directly to the system of claim 1, and thus is rejected using the same rationale.

9. Regarding claim 43, the computer-readable medium comprising instructions for performing a concurrent context switching procedure corresponds directly to the system of claim 1 and the method of claim 21, and thus is rejected using the same rationale.

10. Regarding claim 44, the system for performing a concurrent context switching procedure corresponds directly to the system of claim 1, the method of claim 21, and the computer readable medium of claim 43 and thus is rejected using the same rationale.

11. Since all the limitations of the claimed invention were disclosed by Ehlig, claims 1, 21, and 43-44 are rejected.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 2-20 and 22-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ehlig et al. (U.S. Patent Number 5,349,687), hereinafter referred to as Ehlig, in view of Hoffman et al. (U.S. Patent Number 5,815,678).

14. Regarding claim 2, Ehlig disclosed a system for performing a concurrent context switching procedure, comprising: a main context that is configured to support system execution tasks; a first concurrent context that supports first concurrent procedures; a second concurrent context that supports second concurrent procedures; and a context control module that controls switching procedures between said main context, said first concurrent context, and said second concurrent context (Abstract, Figures 22-24, column 33 lines 30-41, column 40 lines 3-16, lines 41-51, column 67 lines 49-64).

15. Ehlig taught the invention substantially as claimed. However, Ehlig did not expressly teach a system wherein said first concurrent context and said second concurrent context support isochronous processes for handling time-sensitive isochronous information.

16. Ehlig suggested exploration of art and/or provided a reason to modify the concurrent context switching system with additional features (column 52 lines 27-35).

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17. Hoffman disclosed a system for application programming interface in which isochronous communications are supported for use with applications that support isochronous processes for handling time-sensitive isochronous information (column 2 lines 52-65).

18. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the system of Ehlig with the teachings of Hoffman to support isochronous processes for handling time-sensitive isochronous information for the reason that the transport of the video data be carried with complete time synchronization in order to be usable (column 2 lines 52-65).

19. Regarding claim 3, Ehlig disclosed a system wherein said concurrent context switching procedure occurs in one of a computer device, a set top box, an electronic network device, and a consumer electronic device (Abstract, column 3 lines 47-50, column 4 lines 14-21).

20. Regarding claim 4, Hoffman disclosed a system wherein said system for performing said concurrent context switching procedure is part of an electronic network that is implemented according to an IEEE 1394 serial bus standard (Figure 2 sign 212, column 2 lines 52-65).

21. Regarding claim 5, Ehlig disclosed a system wherein a picokernel module manages said context control module to perform said concurrent context switching procedure (column 40 lines 3-16, lines 41-51, column 67 lines 49-64).

22. Regarding claim 6, Ehlig disclosed a system wherein said first concurrent procedures include executing a first process in said first concurrent context while

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concurrently loading a second process into said second concurrent context, and wherein said second concurrent procedures include executing said second process in said second concurrent context while concurrently loading a third process into said first concurrent context (column 40 lines 3-16, lines 41-51, column 67 lines 49-64).

23. Regarding claim 7, Ehlig disclosed a system wherein said context control module alternately repeats additional first concurrent procedures and additional second concurrent procedures after executing said first process and said second process to sequentially support additional processes (Title, column 40 lines 3-16, lines 41-51, column 67 lines 49-64).

24. Regarding claim 8, Ehlig disclosed a system wherein said main context includes a main register set, said first concurrent context includes a first concurrent register set, and said second concurrent context includes a second concurrent register set (Title, column 40 lines 3-16, lines 41-51, column 67 lines 49-64).

25. Regarding claim 9, Ehlig disclosed a system wherein said context control module, said main register set, said first concurrent register set, and said second concurrent register set are included in a central processing unit of an electronic device (column 40 lines 3-16, lines 41-51, column 67 lines 49-64).

26. Regarding claim 10, Ehlig disclosed a system wherein each of said main register set, said first concurrent register set, and said second concurrent register set includes a series of general purpose registers, a program counter register, and a status register (column 6 lines 39-52, column 40 lines 3-16, lines 41-51, column 67 lines 49-64).

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27. Regarding claim 11, Ehlig disclosed a system wherein first information corresponding to a first process is preloaded into said first concurrent register set while said system execution tasks are being executed by using said main register set of said main context (Title, column 40 lines 3-16, lines 41-51, column 67 lines 49-64).

28. Regarding claim 12, Ehlig disclosed a system wherein said context control module causes a context selector to switch to said first concurrent register set of said first concurrent context in response to an isochronous exception, said isochronous exception being triggered by an isochronous clock signal generated from a network interface to said context control module (Title, column 6 lines 39-52, column 40 lines 3-16, lines 41-51, column 67 lines 49-64).

29. Regarding claim 13, Ehlig disclosed a system wherein said first process is executed in said first concurrent context while said context control module concurrently causes a context DMA device to load second information corresponding to a second process into said second concurrent register set of said second concurrent context (Title, column 6 lines 39-52, column 40 lines 3-16, lines 41-51, column 67 lines 49-64).

30. Regarding claim 14, Ehlig disclosed a system wherein said context control module causes said context selector to switch to said second concurrent register set of said second concurrent context when said first process has been executed (Title, column 6 lines 39-52, column 40 lines 3-16, lines 41-51, column 67 lines 49-64).

31. Regarding claim 15, Ehlig disclosed a system wherein said second process is executed in said second concurrent context while said context control module concurrently causes said context DMA device to load third information corresponding to

a third process into said first concurrent register set of said first concurrent context (Title, column 6 lines 39-52, column 40 lines 3-16, lines 41-51, column 67 lines 49-64).

32. Regarding claim 16, Ehlig disclosed a system wherein said context control module causes said context selector to switch to said first concurrent register set of said first concurrent context when said second process has been executed (Title, column 6 lines 39-52, column 40 lines 3-16, lines 41-51, column 67 lines 49-64).

33. Regarding claim 17, Ehlig disclosed a system wherein said third process is executed in said first concurrent context (Title, column 6 lines 39-52, column 40 lines 3-16, lines 41-51).

34. Regarding claim 18, Ehlig disclosed a system wherein said context control module causes said context selector to switch to said main register set of said main concurrent context when said third process has been executed (Title, column 6 lines 39-52, column 40 lines 3-16, lines 41-51).

35. Regarding claim 19, Ehlig disclosed a system wherein said context control module continues to perform said concurrent context switching procedure by alternating between said first concurrent context to support said first concurrent procedures and said second concurrent context to support said second concurrent procedures, to thereby sequentially support any additional processes (Title, column 6 lines 39-52, column 40 lines 3-16, lines 41-51, column 67 lines 49-64).

36. Regarding claim 20, Ehlig disclosed a system wherein said context control module loads new first information for said first process into said first concurrent register set, said central processing unit then returning from said isochronous exception to

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perform said system execution tasks until a new isochronous exception retriggers said concurrent context switching procedure (Title, column 6 lines 39-52, column 40 lines 3-16, lines 41-51, column 67 lines 49-64).

37. Regarding claims 22-42, the method for performing a concurrent context switching procedure corresponds directly to the system of claims 1-20, and thus these claims are rejected using the same rationale.

38. Since all the limitations of the claimed invention were disclosed by the combination of Ehlig and Hoffman, claims 2-20 and 22-42 are rejected.

39. Claims 1-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al. (U.S. Patent Number 5,613,114), hereinafter referred to as Anderson, in view of Liu et al. (U.S. Patent Number 6,519,265), hereinafter referred to as Liu.

40. Regarding claim 1, Anderson disclosed a system for performing a concurrent context switching procedure (column 1 lines 8-10), comprising: a first concurrent context [first thread] that supports first concurrent procedures (Figure 1, column 1 lines 23-43, column 2 lines 22-37); a second concurrent context [second thread] that supports second concurrent procedures (Figure 1, column 1 lines 23-43, column 2 lines 22-37); and a context control module that controls switching procedures between said main context, said first concurrent context, and said second concurrent context (column 5 lines 6-32, column 7 lines 27-50).

41. Anderson taught the invention substantially as claimed. However, Anderson did not expressly teach a main context that is configured to support system execution tasks

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and a context control module that controls switching procedures between main context and other concurrent contexts.

42. Anderson suggested exploration of art and/or provided a reason to modify the system for performing a concurrent context switching procedure with other features (column 11 lines 42-57).

43. Liu disclosed a system for performing a concurrent context switching procedure comprising a main context that is configured to support system execution tasks (column 2 lines 13-32, column 3 lines 30-47) and a context control module that controls switching procedures between main context and other concurrent contexts (column 6 lines 30-39, column 9 lines 14-35).

44. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the system of Anderson with the teachings of Liu to include the main context feature in order to synchronize system execution tasks with other concurrent contexts (Liu, column 4 lines 15-18).

45. Regarding claim 2, Liu disclosed a system wherein said first concurrent context and said second concurrent context support isochronous processes for handling time sensitive isochronous information (column 4 lines 56-67).

46. Regarding claim 3, Liu disclosed a system wherein said concurrent context switching procedure occurs in one of a computer device, a set top box, an electronic network device, and a consumer electronic device (column 1 lines 23-37, column 3 lines 56-62).

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47. Regarding claim 4, Liu disclosed a system wherein said system for performing said concurrent context switching procedure is part of an electronic network that is implemented according to an IEEE 1394 serial bus standard (column 5 lines 1-8).

48. Regarding claim 5, Liu disclosed a system wherein a control store [picokernel module] manages said context control module to perform said concurrent context switching procedure (Figure 4 sign 412, Figure 5 sign 412, column 6 lines 29-38).

49. Regarding claim 6, Anderson disclosed a system wherein said first concurrent procedures include executing a first process in said first concurrent context while concurrently loading a second process into said second concurrent context, and wherein said second concurrent procedures include executing said second process in said second concurrent context while concurrently loading a third process into said first concurrent context (column 5 lines 6-33).

50. Regarding claim 7, Anderson disclosed a system wherein said context control module alternately repeats additional first concurrent procedures and additional second concurrent procedures after executing said first process and said second process to sequentially support additional processes (column 1 lines 23-43).

51. Regarding claim 8, Liu disclosed a system wherein said main context includes a main register set, said first concurrent context includes a first concurrent register set, and said second concurrent context includes a second concurrent register set (Figure 3, column 4 lines 42-55).

52. Regarding claim 9, Liu disclosed a system wherein said context control module, said main register set, said first concurrent register set, and said second concurrent

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register set are included in a central processing unit of an electronic device (Figure 3, column 3 lines 56-62, column 4 lines 42-55).

53. Regarding claim 10, Liu disclosed a system wherein each of said main register set, said first concurrent register set, and said second concurrent register set includes a series of general purpose registers, a program counter register, and a status register (Figure 3, Figure 5, Figure 6, column 4 lines 42-55).

54. Regarding claim 11, Liu disclosed a system wherein first information corresponding to a first process is preloaded into said first concurrent register set while said system execution tasks are being executed by using said main register set of said main context (column 6 lines 30-39, column 9 lines 14-35).

55. Regarding claim 12, Liu disclosed a system wherein said context control module causes a context selector to switch to said first concurrent register set of said first concurrent context in response to an isochronous exception, said isochronous exception being triggered by an isochronous clock signal generated from a network interface to said context control module (column 3 lines 30-47, column 4 lines 56-67).

56. Regarding claim 13, Liu disclosed a system wherein said first process is executed in said first concurrent context while said context control module concurrently causes a context DMA device to load second information corresponding to a second process into said second concurrent register set of said second concurrent context (column 4 lines 42-55, column 6 lines 17-28, column 7 lines 4-20).

57. Regarding claim 14, Anderson disclosed a system wherein said context control module causes said context selector to switch to said second concurrent register set of

said second concurrent context when said first process has been executed (column 5 lines 6-32).

58. Regarding claim 15, Liu disclosed a system wherein said second process is executed in said second concurrent context while said context control module concurrently causes said context DMA device to load third information corresponding to a third process into said first concurrent register set of said first concurrent context (column 4 lines 42-55, column 6 lines 17-28, column 7 lines 4-20).

59. Regarding claim 16, Anderson disclosed a system wherein said context control module causes said context selector to switch to said first concurrent register set of said first concurrent context when said second process has been executed (column 5 lines 6-32, column 7 lines 27-50).

60. Regarding claim 17, Anderson disclosed a system wherein said third process is executed in said first concurrent context (column 5 lines 6-32, column 7 lines 27-50).

61. Regarding claim 18, Liu disclosed a system wherein said context control module causes said context selector to switch to said main register set of said main concurrent context when said third process has been executed (column 6 lines 30-39, column 9 lines 14-35).

62. Regarding claim 19, Anderson disclosed a system wherein said context control module continues to perform said concurrent context switching procedure by alternating between said first concurrent context to support said first concurrent procedures and said second concurrent context to support said second concurrent procedures, to

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thereby sequentially support any additional processes (column 5 lines 6-32, column 7 lines 27-50).

63. Regarding claim 20, Liu disclosed a system wherein said context control module loads new first information for said first process into said first concurrent register set, said central processing unit then returning from said isochronous exception to perform said system execution tasks until a new isochronous exception retriggers said concurrent context switching procedure (column 3 lines 30-47, column 4 lines 56-67).

64. Regarding claims 21-42, the method for performing a concurrent context switching procedure corresponds directly to the system of claims 1-20, and thus these claims are rejected using the same rationale.

65. Regarding claim 43, the computer-readable medium comprising instructions for performing a concurrent context switching procedure corresponds directly to the system of claim 1 and the method of claim 21, and thus is rejected using the same rationale.

66. Regarding claim 44, the system for performing a concurrent context switching procedure corresponds directly to the system of claim 1, the method of claim 21, and the computer readable medium of claim 43 and thus is rejected using the same rationale.

67. Since all the limitations of the claimed invention were disclosed by the combination of Anderson and Liu, claims 1-44 are rejected.

Conclusion

68. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Refer to the enclosed PTO-892 for details.

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69. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tam (Jenny) Phan whose telephone number is (571) 272-3930. The examiner can normally be reached on M-F 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Cuchlinski can be reached on (571) 272-3925. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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